

# **New Approaches to Assessing CSR & Sustainability Disclosure: Insights into the Updateability of Web-based Data.<sup>1</sup>**

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## **Abstract:**

**Aim:** this paper aims to introduce novel methods assessing longitudinally the performance of firms in CSR & sustainability disclosure that have been published on their websites of 13 major oil companies working in Libya. We develop the methods of the extent of updating Web information in two ways, the significance of CSR-related Website Reconstruction (CSRWR), Updateability Rates (URs) of Web CSR contents. Furthermore, investigate how and why the political change, and its consequences, influence the metrics of updateability of Web CSR & sustainability disclosure in that country with special regard on the contrasts between foreign and local ownerships.

**Research method:** around 2000 CSR data records, related to the period from 2008 to 2015, have been collected by accessing more 6000 web pages on websites of 13 major oil companies working in Libya. These data have been uniquely analysed to assess commensurably the awareness and significance of CSR & sustainability disclosure in the studied firms.

**Findings:** the crises time clearly influences the performance of firms in website management from CSR & sustainability disclosure perspective. We have deductively reasoned the longitudinal change of the significance of CSRWR, URs of web contents in respect to different types of CSR & sustainability information and different types of ownerships.

**Originality:** understanding the awareness and significance of CSR & sustainability disclosure deeper by introducing the chronological map of CSRWR using publicly available timing data.

**Keywords:** CSR & sustainability disclosure; updateability; Web data; Website reconstruction; Libya.

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<sup>1</sup> This Working paper is submitted for 'Annual Conference with Doctoral Masterclasses 2019' at University of Birmingham in April 2019. Therefore, kindly, any direct/indirect quotation from this paper is not permitted.

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## Introduction

In many countries, the extent and nature of CSR disclosure can be evaluated simply by consulting companies' websites. Numerous researchers, especially in developed countries, have argued that websites are important sources of information for stakeholders (Abouzkeh, 2013; Elmogla, 2009; Rowbottom & Lymer, 2009; Wanderley, Lucian, Farache, & De Sousa Filho, 2008). In contrast to traditional media, web-based media are easy for companies to update and for users to access at any time (Nyahunzvi, 2013) and some . They are also a low cost way for companies to publicise their commitment to social responsibility and to show how sustainable their operations are (Ashbaugh, Johnstone, & Warfield, 1999; Nyahunzvi, 2013; United Nations, 2011). Andrikopoulos & Krikalani (2013) assert that unlike printed reports, which are mostly motivated by regulatory requirements, web-based reporting reflects companies' desire to communicate voluntarily with the full range of stakeholders.

The first example of web-based CSR disclosure in Libya was posted by the Brega Petroleum Marketing Company on 13<sup>th</sup> November 2004, five years before publishing the first article in refereed journal based on printed-reporting data (Pratten & Mashat, 2009). That website, which was written entirely in Arabic, was still under construction, and the disclosure was simply an announcement introducing a web page on health and safety<sup>3</sup>. As recently as five or six years ago, there was little online social or environmental disclosure in Libya (Elmogla, 2009), though non-monetary CSR information was widely disclosed by oil companies in their annual reports (Ahmad, 2004).

Updateability is highly attractive feature of websites as successful media (Ashbaugh et al., 1999; Bolívar, 2009; Gandía, 2008; Lodhia, 2014; Utama, 2017) for disclosing CSR information (Elmogla, M. and Cowton, Christopher J., and Downs, 2011). The success of CSR agenda is based on how reliable is CSR disclosure (Khan & Ismail, 2011; Pérez & del Rodríguez Bosque, 2013) and also utilising efficiently the disclosure tools such as websites (Ashbaugh et al., 1999; Isa, 2011). Updating web content is also an indicator of reliable disclosure (Ettredge, Richardson, & Scholz, 2002; Lodhia, 2006).

Deep understanding of awareness of CSR disclosure requires awareness of characteristics of the used media. Different features and properties in different medium might lead to variant ways of disclosing information and communication with stakeholders. Consequently, the efficiency of using each type of medium should be evaluated differently according to not only the specifications of used media tools but also the extent of proficiency of using them.

Updateability of websites is not just frequent purposeful changes in CSR web content (the first method) but also CSRWR through frequent launching new web pages (the second method). Updating Web content reflects awareness of improving communication with stakeholders (Hinson, Boateng, & Madichie, 2010; Sari, Suryoputro, Rochman, Ulandari, & Puspawardhani, 2015) and supports firms' transparency (Dhanani & Connolly, 2012; Maahlo, Ratsoana, & Mearns, 2014). Chronological map of CSRWR in respect to different types of CSR information to understand deeper the firms' awareness of the significance of published information is a novel contribution to the literature; of which studying such quality is probably lacking (Hernández, Jiménez, & Martín, 2009; Thimm, Rasmussen, & Gohout, 2016). From CSR & sustainability perspective, management of online information is essential for evaluating the performance of firms not only in disclosure (Hinson et al., 2010), but also in practice.

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<sup>3</sup> <http://web.archive.org/web/20041113031127/http://www.brega-ly.com/serv05.htm> accessed 12/06/2016.

Since this context, Libya, has passed through dramatic crisis-like political change since 2011, legitimacy perspective could perhaps be one of the most appropriate theoretical frameworks can explain the findings of this paper (Ashforth & Gibbs, 1990; Beddewela & Fairbrass, 2016; Deegan, Rankin, & Voght, 2000; Fernando & Lawrence, 2014; Rahaman, Lawrence, & Roper, 2004). Foreign affiliation might have different legitimization progression with respect to CSR issues (Darendeli & Hill, 2015; Palmer & Mohammed, 2014) rather than local firms (Kuada & Hinson, 2012). The extractive industry in developing countries is originally based on foreign affiliation (Kailani & Saleh, 2012; Smith & Coriell, 2011) by which CSR agendas of local firms are affected (Islam & Deegan, 2008); or probably effected (Beddewela & Fairbrass, 2016). Hence, the ownership structure could perhaps be the appropriate classification of data in respect of longitudinal analysis of URs in two different methods as indicators to assess CSR agendas.

As with most other oil-production countries, public ownership in Libya does not consist of any private partnership (Marcel, 2006). Joint Venture Companies (JVCs) are the ‘operators’ who have been established as a result of discovering commercial quantities of crude oil in a specific block by new specific foreign MNCs, which are involved in upstream activities. Any further feasible oil explorations that would be found by that MNC should be produced by the same operator. Such ‘operators’ are working as dependant JVCs. In other words, they are operational representative of partnerships between National Oil Corporation (NOC), which is Libyan party, and foreign MNCs and the final outcome of these partnerships is ruled by Exploration and Production Sharing Agreement (EPSA) (Booth & Kordvani, 2012; Leerberg, McLure, & Winfrow, 2005). On the other hand, National Oil Companies (NCs), which are working in upstream/downstream activities, are financially independent firms and fully owned, and controlled the same as JVCs, by the Libyan authorities. The three types of ownership structure (owner, NCs and JVCs) have, presumably, different motivations to disclose CSR information and, consequently, different extents of threats they might face in crisis time.

Ownership is also internationally considered in terms of using the first language; state MNC are likely to disclose in first language of the country where headquarters is based; to which Libyan context is similar (Abouzkeh, 2013). In fact, it is not clear whether launching EVWs may (or may not) for non-Arabic-speaker stakeholders; sometimes, it just resembles a business convention within an industry substantially depends on foreign partnerships (cf. Abdulhamid, 2011). Alternatively, the bilingual difference in CSR & sustainability agendas at the same company can be also explained as due to the nature of the published topic is considered sometimes to avoid the probable mistranslations in the textual content. Publishing 130 data records from 2008-2015 in English language on Arabic Version Websites (AVWs) of oil companies supports the latter interpretation about the probable reason for launching English Version Websites (EVWs) in oil companies. This approach stands on an assumption that the language used in publishing specific Web content that has certain level of significance at a specific group of stakeholders’ interests does not affect—the language is meant—significantly the homogeneity of their interests, if it is published on the internet in another language at specific multi-language context (Biddinika et al., 2016; Gjøllberg, 2009).

Nevertheless, great level of asymmetry found in the bilingualism of CSR agendas—from disclosure wise—of most oil companies in Libya (Table 1). This delineate the empirical context on which most analysis of this paper is based. The comparison on Table 1 is based on neither lexical nor alphabetic matching of CSR agendas; it stands on comparing the significance (based on number of data records) of each type of CSR disclosure (from high to low) on both versions of websites, Arabic and English. The *symmetric* bilingualism (Pearson

Correlation  $\geq 0.30$ ; P-value  $\leq 0.05$ ) means the degree of significance of each type of CSR disclosure is bilingually similar; while in the case of *asymmetry* bilingualism is not. Table 1 shows, for example, four Joint Venture Companies (JVCs) disclosed in an asymmetric bilingualism in 2008-2009 while all the four companies, obviously, have already launched bilingual websites (Arabic and English); in that period only two JVCs launched monolingual websites, only English version. Hence, most results of data analysis in this paper have a linguistic consideration in respect to determining the URs of CSR disclosure (AVWs & EVWs).

Table 1: The extent of bilingualism symmetry of oil companies' agendas in respect of the significance of CSR & sustainability disclosure published on their bilingual websites from 2008 to 2015.

Company Name	Type	2008-2009	2010-2011	2012-2013	2014-2015
National Oil Corporation	Owner	<b>Symmetric</b>	Asymmetric	<b>Symmetric</b>	Asymmetric
Akakus Oil Company	JVC	Asymmetric <sup>4</sup>	Asymmetric	English Only	English Only
Zuetina Oil Company	JVC	⊗ <sup>5</sup>	Arabic Only	Asymmetric	Arabic Only
Waha Oil Company	JVC	Asymmetric	Asymmetric	Asymmetric	<b>Symmetric</b>
Horouj Oil Company	JVC	Asymmetric	Arabic Only	Asymmetric	Asymmetric
Melita Oil Company	JVC	English Only	Asymmetric	Asymmetric	Asymmetric
Serte Oil Company	NC	Arabic Only <sup>⊗</sup>	Ⓢ <sup>6</sup>	Asymmetric	Asymmetric
Brega Marketing Oil Co.	NC	Asymmetric	Asymmetric	Asymmetric	Arabic Only <sup>⊗</sup>
Arahila Oil Company	NC	Arabic Only <sup>⊗</sup>	Arabic Only <sup>⊗</sup>	Asymmetric	<b>Symmetric</b>
Azawia Refinery Company	NC	Arabic Only	Ⓢ	Arabic Only	Asymmetric
Arab Drilling and Work-over Company <sup>7</sup>	JVC	⊗	English Only <sup>⊗</sup>	English Only <sup>⊗</sup>	English Only <sup>⊗</sup>
Retaj Group* <sup>8</sup>	NC	⊗	⊗	English Only <sup>⊗</sup>	English Only <sup>⊗</sup>
Akeel*	NC	⊗	⊗	Only English <sup>⊗</sup>	Only English <sup>⊗</sup>

## Research methods and methodology

The first method, which is URs of 'Web contents' in respect to the frequency (in biennial basis) of publishing web page in specific website contains specific type of CSR disclosure, size (in words) and specific URL. The more the repetition of publishing a web page,

<sup>4</sup> Determining asymmetric/symmetric website in specific period is sometimes done while one of versions of website was NOT found on [www.archive.org](http://www.archive.org) in that period; the reason why that website is asymmetric/symmetric is the fact that part of disclosure of certain company related to that period has been published (or found) on the website in the next period. For example, Akakus Oil Company has asymmetric bilingual (disclosure) in 2008-2009 while we have found on [www.archive.org](http://www.archive.org) in this period only EVW; the first version of Arabic website of this company found in the beginning of 2011 contains CSR information published in 2009.

<sup>5</sup> ⊗ or of superscripted ⊗; there is no evidence of whether they did launch a website (⊗ bilingual; ⊗ monolingual) that period or not due to the fact that [www.archive.org](http://www.archive.org) did not capture it. Therefore, the bilingualism of all companies with ⊗ is NOT asymmetric.

<sup>6</sup> Ⓢ there was no disclosure observed on both versions of company's websites (Arabic and English) in that period.

<sup>7</sup> This company is the only out of 10 public companies in the research sample is not owned by NOC (the owner).

<sup>8</sup> The two starred (\*) companies are the only firms, in research sample, working in private sector.

the less the UR of this web page regarding to the total number of web pages<sup>9</sup> in that website. The following equation determines the rate for specific web page (URL) that is has been observed in other (biennial) periods twice or more. This means any unique URL (frequency = 1) has UR of 100%.

$$Updateability\ rate_{URL} = 1 - \frac{Frequency_{URL}^{\geq 2}}{Total\ number\ of\ Web\ pages\ in\ the\ checked\ Website}$$

For instance, community CSR information (200 words) has been published on a web page (URL) has occurred four times in 2012-2013 and 2014-2015, twice each. Accordingly, this URL of the same type of CSR disclosure and the same size of textual contents has been occurred in four different data records. The total number of webpages in the checked website is 100 in 2012-2013 on a website of specific company and in 2014-2013 that website has expanded to 150 web pages in total. Accordingly, the UR of this URL in 2012-2013 is  $(1 - 4 \div 100 = 96\%)$  and in 2014-2015 is  $(1 - 4 \div 150 = 97.4\%)$ . These are two figures of updateability for four data records only (out of 1,982 data records). The weighted average of UR of community disclosure (CD) data records in, for example, 2012-2013 is:

$$Avg.\ Updateability\ rate_{CD\ during\ 2012-2013} = \frac{\sum Updateability\ rates_{CD\ during\ 2012-2013}}{\sum Frequency_{CD\ during\ 2012-2013}}$$

The reason why Table 4 shows figures of URs at high values (mostly above 90% percent and sometimes 100%) is biennial-basis presentation of analysing data. As mentioned in Footnote 12, the lack of data from the only available source, that we have, prevented structuring the data annually and, otherwise, URs would have been numerically at lower level in general.

It is worth saying that this method does measure neither alphabetical nor lexical uniqueness of CSR textual contents. Instead, it depends on qualitative and quantitative characteristics of CSR disclosure has been published with specific language. In other words, this method assumes that re-publishing any CSR textual contents of specific type (quality) and specific size (quantity) with the same language but on different web page (URL) is unlikely to be literally the same. Moreover, two different CSR contents with the same meaning may be influentially *different* (Barnbrook, Danielsson, & Mahlberg, 2004) and they are unlikely to be with the same size. Accordingly, the change in either the size, type of CSR disclosure or the address of the used Web-vehicle for a specific CSR data record is likely to be sufficient to consider it as one more different, and unique, CSR data record.

The important part of CSR-related Website Reconstruction (CSRWR), which is the second method, is detecting the date of creating/launching webpages. There are many ways to identify the date of creating or launching web, contacting the owner of the website, checking the technical specifications of the concerned webpages that have been provided through many

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<sup>9</sup> Due to the lack of CSR specification in companies' Web hierarchies, searching for CSR information on websites have been done in a webpage-to-webpage method (eyeballing approach). Therefore, all the checked web pages are substantially (if not entirely) equivalent to the total size of websites.

web browsers, or using the attributes of cache versions that have been ‘captured’ by [www.archive.org](http://www.archive.org). The researcher failed to find alternative source of data by, for example, crawling the technical attributes through the tools facilitate web browser, particularly Google chrome<sup>10</sup>, and the know-how specialisation is entirely needed in this approach.

For CSRWR method, [www.archive.org](http://www.archive.org) states that their mechanism of capturing websites is as follows “*Internet Archive's crawls tend to find sites that are well linked from other sites*”<sup>11</sup>. This means that their mechanism of capturing web pages, in general, is based on the extent of how popular is (or is not) that web page. Accordingly, the additional statistics provided by this website about capturing specific web page within specific time line can used as an indicators of popularity birth date and date of the end of popularity life for that web page as shall be presented in detail.

Web-based data have been longitudinally crawled, as archived in [www.archive.org](http://www.archive.org), in this research study form 13 oil companies’ websites. We have checked bilingually the websites of oil companies into four, and not less than three<sup>12</sup>, different calendar points from 2008 to 2015. Accordingly, the data have been longitudinally categorised in 4 biennial periods, in most of the tables and figures in this research study. Consequently, the biennial intervals are the appropriate basis for determining the extent of CSR disclosure ‘updateability’.

This method of identifying the popularity dates of birth (and ages) of web pages, where CSR information is published, is methodologically associated with stakeholders’ engagement in the contents of which those web pages contain. In other words, the more the popular CSR webpage the more the stakeholders’ usage and, probably, engagement. Stakeholders engagement is strategically sought by many firms by adopting an appropriate CSR agendas in respect to legitimacy (Barone, Ranamagar, & Solomon, 2013; Edgley, Jones, & Atkins, 2015), profitability (Rodriguez-Melo & Mansouri, 2011) or achieving specific organisational goals (Hamidu, Ibrahim, & Daneji, 2014). This paper aims to translate chronologically the probable changes in firms’ CSR agenda through the extent of CSRWR took place (or launching individual web pages) during a period of time. Accordingly, researcher sought for the historical information of oil companies’ websites through their cached versions on [www.archive.org](http://www.archive.org). This website provides chronological information about ‘captured’ websites that have been archived (Murphy, Hashim, & O’Connor, 2007). This information is presented, based on the chosen URL, as a calendar format and summarised above the electronic calendar with the dates of first and last cached version of the concerned URL. With regards to the adopted mechanism of this website, which is popularity<sup>13</sup>, the difference between these two dates is an equivalent to ‘popularity life’.

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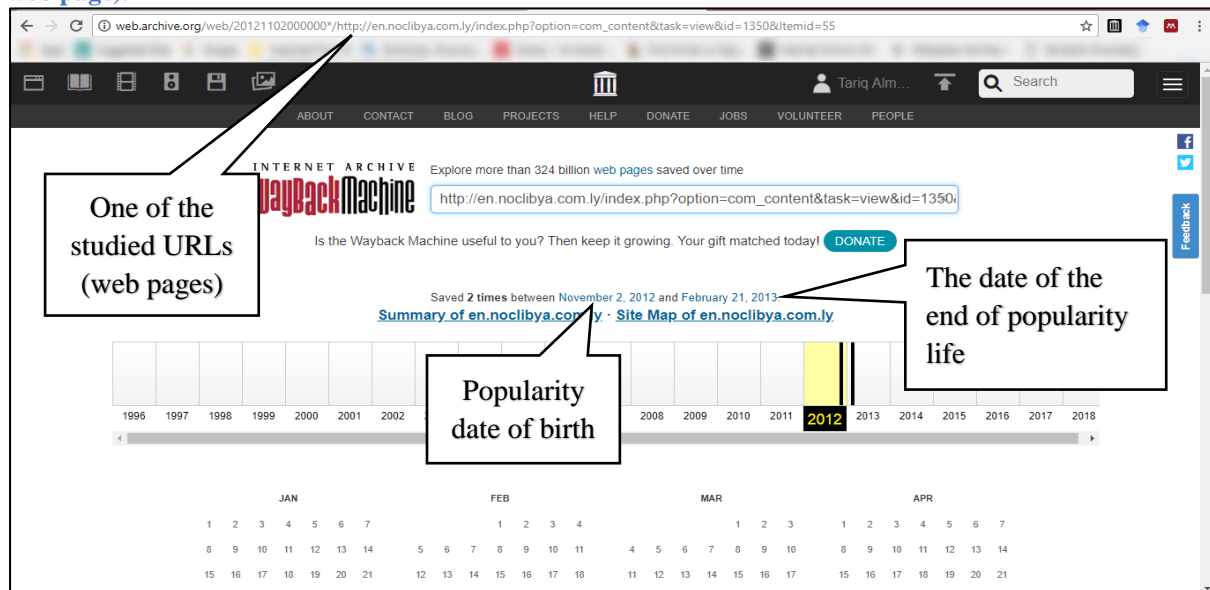
<sup>10</sup> All what researcher could obtain is ‘the date of last Google’s cache’. This is different from the requirements of this study, creating/launching webpage.

<sup>11</sup> <https://archive.org/about/faqs.php>, accessed in 01/07/2016.

<sup>12</sup> Failures of archiving a capture of some websites in some years by [www.archive.org](http://www.archive.org) and shutdown websites in some companies are reasons for adopting a biennial, instead of annual, categorisation to maximise the longitudinal regularity of data.

<sup>13</sup> See [https://archive.org/about/faqs.php#The\\_Wayback\\_Machine](https://archive.org/about/faqs.php#The_Wayback_Machine), accessed in 15/02/2016.

**Figure 1: The illustrations of how chronological data of CSRWR can be collected (this is an example of one web page).**



As mentioned earlier, the data of ‘popularity date of birth’ of web pages is provided by [www.archive.org](http://www.archive.org). All data records of CSR disclosure must be checked at [http://web.archive.org/web/\\*/<URL of data record>](http://web.archive.org/web/*/<URL of data record>) and collecting the ‘popularity date of birth’ in each data record according to steps to collect data, as illustrated in Figure 1, starts from displaying a report provided by [www.archive.org](http://www.archive.org) about the ‘summary of captures’ of the concerned web page during all along its popularity life. Figure 1 shows the time line from first capture (popularity date of birth) until the last one (The date of the end of popularity life) of the following web page:

[http://en.noclibya.com.ly/index.php?option=com\\_content&task=view&id=1350&Itemid=55](http://en.noclibya.com.ly/index.php?option=com_content&task=view&id=1350&Itemid=55) which, as mentioned earlier, should be prefixed with [http://web.archive.org/web/\\*/](http://web.archive.org/web/*/).

All tables and figures plotted are structured and presented by logarithmic averages of the timing data of *launching* web pages which is different from the timing data of *publishing* CSR data records of which the *launched* web pages are (or *not*) permanently consisted during their popularity life. This means that not all *launched* web pages in specific period are vehicles for all (or some) CSR data records *published* during the same period and vice versa.

We developed this method from Murphy et al. (2007) who are the first introduced it to determine ages of websites but without testing its validity and reliability. The validity test for this method is crucial to know whether the gap between the ‘birth date of popularity’ of web pages and the ‘actual date of launching’ them is not significant. In other words, this test aims to identify the responsivity of archive.org to this context (oil companies working in Libyan oil sector) in terms of capturing the updates of their websites. It is worth noting that the mechanism of archive.org is based on how popular a web page is (or a website) compared to others as stated on archive.org “*Internet Archive's crawls tend to find sites that are well linked from other sites*”<sup>14</sup>. The popularity of web page (or website), accordingly, may be attributed to the context

<sup>14</sup> <https://archive.org/about/faqs.php>, accessed in 01/07/2016.



and industry to which (large or small) number of stakeholders are attractive; the population of internet society in the context could perhaps be an influential factor (Information Geographies at the Oxford Internet Institute, 2013).

To identify the responsivity of archive.org to Libyan context, the statistical comparison shall be made in each data record (web page) between the ‘*Dates of Publishing CSR information*’ (DPs) and the *Dates of the First Next Capture* (DFNCs) of the same webpage. This could be an appropriate test to determine how the actual dates of launching web pages, which is unknown, in each period are averagely earlier than the birth dates of popularity of web pages in the same period.

However, not all oil companies date their posts from where we captured CSR information. As shown in Table 2, item C, two third (63%) of data records of this paper that have been published with dates of posting CSR information on website is the first criterion. The rest of data records have been dated with either of 3 ways respectively. First, the date of the event that post is talking about. Secondly, the middle of time span between the CSR-related post before and after undated post in the order they have been appended to the data-set of this paper since they have all been sequentially presented in one hyperlinked table on websites of some oil companies. Else otherwise, the date of capturing webpage by [www.archive.org](http://www.archive.org) is the only way to date the undated data record. Regardless, CSR data records related to the disclosure dated by oil companies are considered only in validity test of CSRWR method.

To maximise the results of validity test to be used, at least in paper, in CSR & sustainability perspective, web pages have been occupied exclusively by CSR & sustainability information are only considered in this test as the second additional criterion (see Table 2, item E). Accordingly, the validity test is conducted by the third of data records.

**Table 2: The validity of using CSRWR method - the average of differences between and Publishing Dates (PDs) of CSR information and the Dates of the First Next Capture (DFNCs) of the same web pages that have been occupied exclusively for CSR information.**

Description	2008-2009	2010-2011	2012-2013	2014-2015	All 8 years
A- The number of all data records	529	478	474	501	<b>1982</b>
B- The number of data records have PDs (1 <sup>st</sup> criterion)	363	274	263	342	<b>1242</b>
C- % of data records with PDs ( $B \div A$ )	69%	57%	55%	68%	<b>63%</b>
D- The number of data records have PDs (1 <sup>st</sup> criterion) <i>and</i> found on web pages used exclusively for CSR information (2 <sup>nd</sup> criterion).	119	254	150	142	<b>665</b>
E- % of data records with 1 <sup>st</sup> and 2 <sup>nd</sup> criteria ( $D \div A$ )	22%	53%	32%	28%	<b>34%</b>
<b><u>Results of validity test:</u></b>					
F- Max differences between DFNCs and PD (in months)	58	71	42	21	<b>71</b>
G- Min differences between DFNC and PD (in months)	0	0	0	0	<b>0</b>
H- The percentage of the number of zero-difference data records out of all data records (when PDs = DFNCs)	1%	1.5%	19%	24%	<b>11%</b>
I- Logarithmic averages of differences between DFNCs and DPs (in months)	<b>13</b>	<b>8</b>	<b>8</b>	<b>6</b>	<b>8</b>



The web pages where the dates of publishing CSR information match (zero difference) the birth dates of popularity have been captured (by archive.org) after (or exactly at) the date of publishing as presented in Table 2, items G and H. Consequently, publishing dates have been considered as the actual date of launching these web pages.

In general, the results of validity test of CSRWR method shows that *the dates of the next capture* are averagely 8 months after *the dates of publishing* as presented in Table 2. This implies that *the actual dates of launching* web pages are, too, 8 months earlier than *the birth dates of popularity*. Accordingly, CSRWR method still can be used in this context to obtain result by analysis data have been longitudinally set even shorter than 2 years (biennial basis). Consequently, *the birth dates of popularity* of web pages obtained by this method are appropriate substitution for *the actual dates of launching* web pages with special regard on the average gaps in each period as shown in Table 2, items I or I.1 and I.2.

Nevertheless, the validity test reveals either the rapid increase of significance of Libyan context in capturing progress of archive.org or the rapid increase of the general capability of archive.org per se over time. The gap of responsivity has declined from 13 months in 2008-2009 to just 6 months in 2014-2015. However, these results are incomparable with responsivity of archive.org to the updates of, for example, BBC website<sup>15</sup> which has been captured once each 3 to 4 hours in 2014! so, there would not be a gap between BDPs and actual dates of launching web pages in such cases.

It is worth saying that the official web page of ‘terms of use’<sup>16</sup> of [www.archive.org](http://www.archive.org) states in the third paragraph that “... *In using the Archive's site, Collections, and/or services, you further agree (a) not to violate anyone's rights of privacy,*”. Accordingly, the statistical ‘Collections’ which are the ‘number of captures’ (or snapshots) of the studied websites during the research time horizon, have been consistently used in this paper in academic purpose. Consequently, all analytic methods, techniques, collected data of this paper are either introduced or utilised to generally contribute to the academic literature and supporting particularly the studied context.

## Legitimacy Theory

Political concerns are noticeably related to social accounting context (Gray & Bebbington, 2001; Visser, 2005, 2006); especially in petroleum-based economies in Africa (Owoye & Bissessar, 2012) of which Arab Spring countries are part (Al-drugi, 2013; Eltantawy & Wiest, 2011). In Arab spring countries, political alterations influence social corporate, with limited institutional actions (Avina, 2013). Political change plays a main role in changing the institutional environment (Colombo, Caridi, & Kinninmont, 2012; Kailani & Saleh, 2012) which, consequently, threatens firms’ legitimacy due to the context unsteadiness that has a political pattern (Darendeli & Hill, 2015) and political pressure that large firms usually face (Mohamed Adnan, van Staden, & Hay, 2014) in which this paper is involved.

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<sup>15</sup> [https://web.archive.org/web/20140801000000\\*/www.bbc.com](https://web.archive.org/web/20140801000000*/www.bbc.com) , Accessed in 14-05-2018.

<sup>16</sup> <https://archive.org/about/terms.php>, Updated in 31<sup>st</sup> of December 2014, Accessed in 10/07/2016.

Legitimacy theory has been employed widely as a theoretical lens for seeking to understand why companies disclose information voluntarily on the social and environmental domains in combination with economic domain. Legitimacy theory seems the most appropriate theory which could be used as a framework to interpret the paper's findings for many reason; recently, this theory has become rapidly adopted by researchers in the social and environmental accounting area and it has introduced after political economy theory (Lye, Perera, & Rahman, 2006); and conceptually intersects with institutional theory and stakeholders theory (Fernando & Lawrence, 2014; Lye et al., 2006, p. 161); these theories are called 'contractarian' theories (Campbell, 2000). Moreover, legitimacy theory could explain companies' need to improve CSR—with which corporate sustainability intersects (Visser, 2011)—disclosure after the revolution to legitimise themselves to their stakeholder in Libya and abroad. Finally, the influence of management reconstruction on CSR disclosure and practices— was one of very beginning popular applications of this theory in addition to political economy theory (Campbell, 2000).

As mentioned earlier, this paper aims to investigate the inferred relationship between the political influence on CSR agendas of oil companies by analysing their management of CSR-related websites, in different level of totality. Many findings in this paper have been explained by the literature of legitimacy theory in specific cases and potentially related to specific stakeholders. This consists with Deegan & Rankin (1996) who use legitimacy theory to explain empirical findings based of deductive analysis of environmental information published on annual reports. They, conceptually, relegate non-appropriation of the theory due to the probable individuality of beneficiaries (users) in accounting reporting as defined<sup>17</sup> by Accounting Standards Steering Committee by which annual reports are professionally judged. They identified, accordingly, the real extended border of the societal constituents in that their expectations/needs are structurally built-up/changed by individual externalities have been originally generated by (or impacted on) the society at large. Unlike Guthrie & Parker (1989) and Abdul Hamid & Atan, (2011), this implies to mellow the intrinsic totality concept of the societal unity in legitimacy theory even at micro-institutional level.

## Results and discussion

### Updateability Rates (URs) of web CSR contents

Most oil companies, in addition to the owner, have relatively performed well in 2008-2009 when nothing lied on the political horizon of the country. In that period, the disclosure related to the domain of risk management, environment, customer and H&E, (Jamali & Sidani, 2012) was prioritised ahead of social domain, community and employee, as shown in Table 4. Information risk management was mostly above the average of URs during that period (99.2% on AVWs and 97.4% on EVWs) while social information was not. The nature of this industry, oil sector, could be the reason for such performance of CSR agenda (International Petroleum Industry Environmental Conservation Association, 2010; Pratten & Mashat, 2009). This

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<sup>17</sup> "We consider such rights arise from the public accountability of the entity whether or not supported by legally enforceable powers to demand information. A reasonable right to information exists where the activities of an organisation impinge or may impinge on the interest of a user group (p. 17)".

explanation supports legitimacy theory in that rational communication with stakeholder (Colleoni, 2013) increases corporate legitimacy.

It is worth noting that customer engagement/protection disclosure is not significant all over the research time horizon (71 data records only) as shown in Appendix 1. Consequently, its URs might be relegated in most comparative results based on either categorical or chronological analysis in this paper.

A period of 2010-2011 witnessed noticeable decline in URs and relative growing in social disclosure (towards community and employee) probably at expense of risk management issues (see Table 4). The uniqueness of this period is the lowest ever UR on AVWs, 98.7%. This could perhaps be a reason for digging the data deeply to discover, and analyse, what did happen during this period when the greatest political change took place in this context. Table 3 shows more details behind the unique decline in UR in 2010-2011 that shall be discussed later.

Apart from that, JVCs disclosed in the minimal URs compared to NCs; especially on AVWs (95%) in the year of revolution 2010-2011; whereas the highest level of URs is in NCs on their AVWs (100%) in 2010-2011. Consequently, the exceptional circumstances in this period laid on the deduction in URs in that the updating of CSR information of JVCs has declined in 2010-2011 as shown in Figure 2, due to probably the employees evacuation followed the shrink of their performance since political uprising took place in 2011 (Hove, 2017; “SAS assist in evacuation of British oil workers from Libyan desert,” 2011). The fact that political factor can affect the institutional visions and performance of firms in CSR & sustainability issues (Gray & Bebbington, 2001; Visser, 2005, 2006) is the reason why this period has been chosen and magnified, into four different sub-periods, to analyse deeply firms’ performance of updating CSR information later.

What might highlight the explanation about the situation of JVCs in 2010-2011 is the decline in JVCs performance was not in URs only, but also in the volume CSR & sustainability disclosure (from 277 data records in 2008-2009 to 112 in this period) as show in Appendix 1. This supports legitimacy theory in that CSR practices of disclosure of MNCs, on which foreign affiliation for JVCs is mainly based, might be at the risk of being isolated from local CSR norms due to the multi-cultural environment over which they are globally working and consequently, they mostly seek for “symbolic legitimacy” (Barkemeyer, 2007) instead of “substantive legitimacy” (Suchman, 1995). Consequently, this probably made JVCs easier and quicker to withdraw not physically only, but also from the scene of CSR disclosure and practice of the context during the crisis time.

In contrast, NCs and owner (NOC) websites witnessed relatively stable performance of disclosing CSR information since 2008-2009. There is no repetition of CSR information observed on websites of NCs in Libya; especially on AVWs where 34 data records of CSR information have been published (see Appendix 1). However, all of that have been substantially disclosed in just one year, 2010, as shown in Appendix 3 (and Table 3) where deeper look has been given to this period.

Table 3 shows significant longitudinal correlation between the extent of political polarisation and the trend of oil companies' performance (URs). The serious political polarisation has increased since pre-revolution period when Arab spring uprising took place in Tunisia, in the 15<sup>th</sup> of December 2010, which is the closest context to Libya not geographically only, but also the socio-political environment that people in both countries live in (Avina, 2013; Jamali & Sidani, 2012). As many petroleum-based economies, state oil companies have been crucially assigned/established to manage oil assets (Marcel, 2006) and they are controlled and monitored by different governmental bodies which are greatly, if not directly (Owoye & Bissessar, 2012), ruled by political regime; especially in developing countries.

**Table 3: The average of biennial basis updateability of CSR disclosure on AVWs of oil companies in Libya during 2010-2011.**

Type of Disclosure	Pre-Arab Spring	Pre-Revolution	Intra-Revolution	Post-Revolution	Log. Average
Community engagement	99.1%	99.8%	100%	99.0%	<b>99.2%</b>
Customer engagement/protection	100%	-	-	100%	<b>100%</b>
Employee treatments	98.4%	99.3%	100%	100%	<b>98.6%</b>
Environment	99.0%	100%	-	96.0%	<b>98.2%</b>
HS&E	95.2%	99.5%	100%	91.8%	<b>96.2%</b>
<b>Logarithmic Average</b>	<b>98.6%</b>	<b>99.6%</b>	<b>100%</b>	<b>98.1%</b>	
Each period starts from	01/01/2010	15/12/2010	17/02/2011	23/08/2011	<b>01/01/2010</b>
To	14/12/2010	16/02/2011	22/08/2011	31/12/2011	<b>31/12/2011</b>
Duration in days	350	63	186	131	<b>730</b>
Employed management	Pre-reconstruction Management			Reconstructed Management	
Internet services	Available		Blocked	Available	
Number of disclosing companies	7	5	1	5	<b>8 out of 13</b>

Accordingly, the political change in Arab spring has substantially influenced major state oil companies found themselves in a crisis-like period during which legitimacy is highly threatened (Deegan, 2002; Ducassy, 2013; Suchman, 1995). Perhaps the tactic has been adopted in NOC, unlike NCs and JVCs, is seeking legitimacy by was clearly assumed by oil companies in Libya; especially NCs and NOC who all their board members are nationals and, consequently, they are mostly vulnerable of being dismissed. This agrees with legitimacy theory in that changing qualitatively and quantitatively CSR disclosures could help seeking the appropriate legitimacy approach (Guthrie & Parker, 1989; O'Donovan, 2002) and, also, engaging into social activities [even symbolically] might have avoided the collective dismissals (Flickinger, Wrage, Tuschke, & Bresser, 2016) of which they were probably afraid. NOC, NCs and JVCs is the order of the CSR players in this context from high to low performance in respect to URs of CSR disclosure as shown in Appendix 3. It is worth saying that new transitional committees, in most oil companies, have been temporarily appointed and legitimised—followed to dismissals of the former managements—consensually by variety of predominant stakeholders' (especially employees) who had protested the former political regime and their loyalties. During 2012, new managements have been appointed by NOC to hand-over/maintain the temporary committees once the first ever elected government has emerged in Libya.

In general, there is no significant difference in URs after and before revolution in oil companies in Libya. The difference we have found is the prioritisation of CSR information related to 'risk management', especially in HS&E disclosure, during pre-revolution era (from

2008 to 2011) compared post-revolution (from 2012 to 2015) management in respect to URs as shown in Appendix 2 (English & Arabic section). The UR of HS&E soared to the lowest level in 2012-2013, 85.8%, by which this period probably is seen at the lowest UR, 98%.

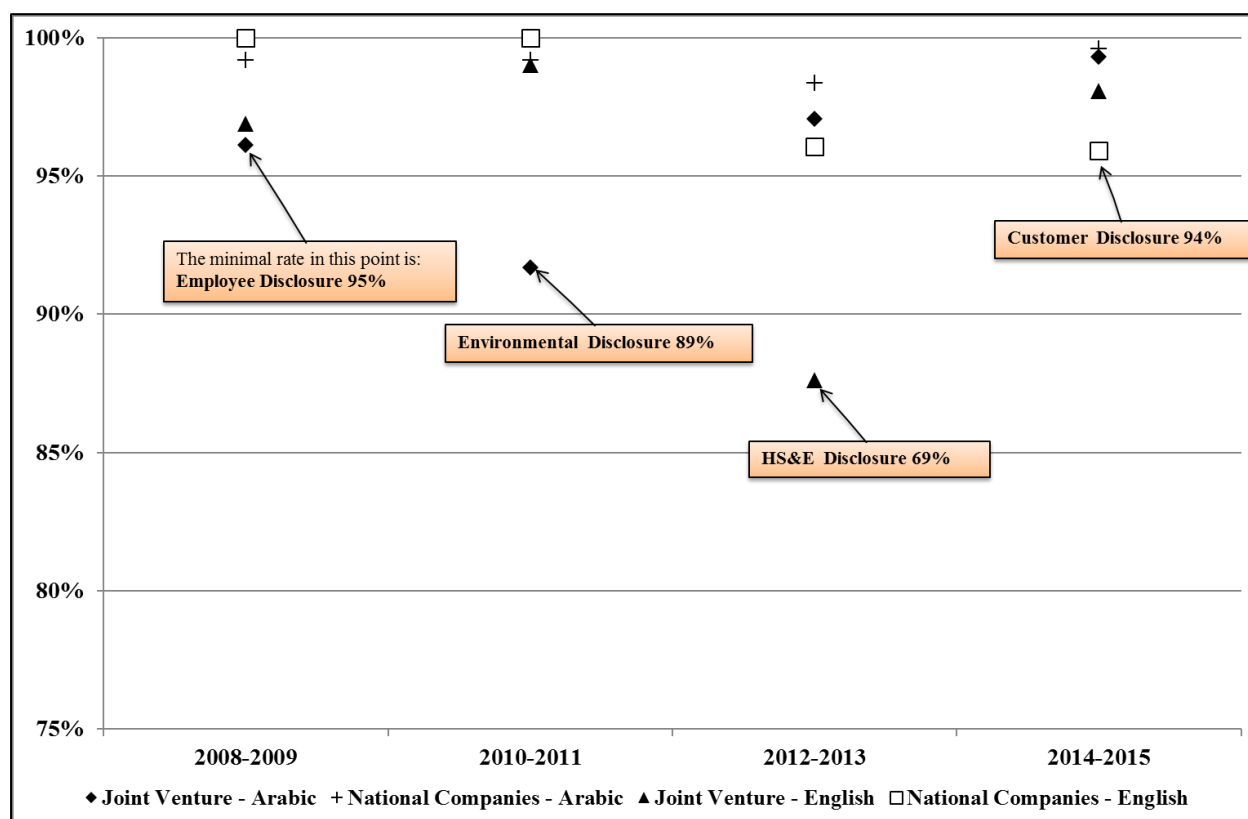


Figure 2: The Updateability of the CSR content on websites in oil companies in Libya

CSR disclosure in the English language is mostly updated in environmental (98.9%) and community disclosure (98.5%) as shown in Table 4. NCs performed better than JVCs in post-revolutionary period when JVCs shrank their activities in Libya. It can be seen in Figure 2 the decline in URs in 2012-2013 in CSR information in the English language websites in JVCs. In that period, for example, averagely 3 data records of HS&E disclosure (out of each 10) were observed as republished CSR disclosure in other periods with the same type of CSR, quantities and the same URLs.

Table 4: The average of biennial-basis updateability of CSR disclosure on websites of oil companies in Libya from 2008 to 2015.

Websites version	Type of Disclosure	2008-2009	2010-2011	2012-2013	2014-2015	Log. Average
Arabic	Community engagement	99.8%	99.2%	98.9%	99.5%	99.2%
	Customer engagement/protection	100%	100%	-	99.9%	99.9%
	Employee treatments	98.3%	98.6%	99.5%	99.9%	99.0%
	Environment	100%	98.2%	99.4%	99.6%	99.0%
	HS&E	100%	96.2%	97.1%	99.6%	98.1%
	<b>Logarithmic Average</b>	<b>99.2%</b>	<b>98.7%</b>	<b>99.1%</b>	<b>99.7%</b>	<b>99.1%</b>
English	Community engagement	97.5%	99.9%	99.4%	98.6%	98.5%
	Customer engagement/protection	98.9%	-	93.2%	95.2%	95.4%

Websites version	Type of Disclosure	2008-2009	2010-2011	2012-2013	2014-2015	Log. Average
	Employee treatments	95.5%	98.9%	97.4%	97.2%	<b>97.0%</b>
	Environment	99.1%	99.2%	98.2%	98.9%	<b>98.9%</b>
	HS&E	93.0%	100%	79.5%	95.2%	<b>92.2%</b>
	<b>Logarithmic Average</b>	<b>97.4%</b>	<b>99.3%</b>	<b>95.9%</b>	<b>97.1%</b>	<b>97.2%</b>

### CSR-related Website Reconstructions (CSRWR)

As mentioned before, synchronising the textual content of CSR information to be close to the recent stakeholders' expectations is crucial; increasing the reliability of disclosed content (Dincer & Dincer, 2010) in terms of maintaining, defending or repairing legitimacy (Cordery & Ayoub, 2017) is one of the goals concerned in this issue. In fact, that is not the only way how to improve the efficiency of achieving the CSR disclosure's institutional goals and making it more communicative through the Web medium. For different reasons firms might, first, launch CSR sub-websites have many web pages (Dincer & Dincer, 2010) followed by, secondly, CSRWR (Nyahunzvi, 2013) by launching new webpages and sometimes deleting others by braking their web links with (or splitting them from) homepages. Website-reconstruction is often subjectively achieved (Brugger, 2009) and, consequently, it could be externality-sensitive website implementation to which this paper aim to study from CSR perspective. Accordingly, the chronology of CSRWRs may indicate to different influential events and managerial eras (of different extents of CSR awareness) of which this context is recently rich (Colombo et al., 2012; Hove, 2017; Lacher & Cole, 2014).

The chronological delay/gap of CSRWR has been highlighted in Table 5, Table 7, **Error! Reference source not found.** and Appendix 4 by thick left-arrow '◀' as a prefix of the figures concerned. This arrow indicates to the *previous* period when most used web pages during the *current* period launched. For example, 2008-2009 witnessed a delay of CSRWR of the owner as presented in Table 5. Most of the CSR information in that period have been published on web pages launched during the second half of 2007. Accordingly, '◀' highlights the CSRWR delay of this firm during 2008-2009.

Table 5 shows the CSRWRs have been achieved by different groups of oil companies (owner, JVCs and NCs) during the period from 2008 to 2015 in biennial basis. Different oil companies have reconstructed CSR-related websites in different trends. For instance, most of CSR disclosure of JVCs observed in 2008-2009 and 2010-2011 have been launched during 2008-2009; especially on AVWs as presented in Appendix 4.

CSRWRs of AVWs of NCs was delayed longer than JVCs during pre-revolution era as shown in Appendix 4. However, NCs has achieved CSRWRs of AVWs during pre-revolution period mostly in 2008 by launching 14 webpages out 43 (14 in 2008-2009 and 29 in 2010-2011) during the four years as shown in Appendix 4 and Appendix 5. The first CSRWR of NCs observed was during the first half (Q1 and Q2) of 2012 on EVWs as presented in Appendix 4. This means that NCs had almost suspended all CSRWR on EVWs for 4 years since 2008.



Table 2 shows that most web pages are not launched exclusively for CSR information. Accordingly, the delay of using web pages as CSR vehicles does not mean that these web pages have not been used for other contents since launching date. In other words, the detected delay of CSRWR in certain website reflects, to some degree, the *insignificance of CSR information* in that the decision of launching web pages has been made originally for non-CSR information.

The CSR-related website of NOC has been reconstructed uniquely in 2010-2011. Appendix 5 presents tremendous CSRWR, especially on AVW, by launching a record number of web pages, 277. Most of them have been used to publish CSR information from 2010 to 2013 as shown in Table 5. However, this gigantic CSRWR on NOC's website observed after long chronological CSRWR gap, almost 3 years (from Q2-2007 to Q1-2010) as shown in Table 5. Although the second largest CSRWR on AVW of NOC was in 2008-2009 when 227 new webpages have been launched (see Appendix 5), that CSRWR took place in Q4-2009 as shown in Table 5. That is why the CSR disclosure of the owner (NOC) during 2010-2011 was mostly published on webpages launched in Q1-2010.

From CSRWR chronological regularity perspective, JVCs, NOC and NCs are the sort of different groups of oil companies from low to highly sensitive to political events of Arab spring in this context as shown in Table 5. These events and their seismic consequences (Bodansky, 2016; Mattes, 2016) have ironically impacted on the chronological map of CSRWR with respect to, probably, the extent of legitimacy threats have each faced (Rahaman et al., 2004) and perceived (Deegan et al., 2000) over time.

For instance, JVCs have done CSRWRs during pre-revolution period (105 webpages) twice larger than post-revolution period (51 webpages) as presented in Appendix 5. Therefore, the CSRWRs of JVCs during the eight years (2008 to 2015) were mostly during 2009, especially Q4. This means that CSR-related websites of JVCs are becoming, after revolution, less significant from CSRWR perspective. This can be substantially referred to the new managements appointed in these companies after stepping down the former political regime. Furthermore, JVCs (as foreign-affiliated oil companies) are less likely to respond to the crisis through CSR-related websites (Amran & Devi, 2008), compared to NOC and NCs. This is a reason for performing at the longest delay of CSRWR (Q4-2009) as presented in Table 5.

Despite NCs saw the recent CSRWRs (Q3-2011), compared to NOC and JVCs. These non-foreign-affiliated oil companies witnessed the longest CSRWR gap, 4 years. Table 5 shows that since Q2-2008, NCs had not achieved any major CSRWRs until Q1-2012. Appendix 4 shows that CSRWR of AVWs of NCs mainly took place by pre-revolution management (Q2-2011), while CSRWR of EVWs were done by managements appointed after post-revolution period (Q1-2012). Furthermore, CSR-related EVWs of NCs had been significantly reconstructed for longer than 6 years until 2012. In other words, 2012 witnessed the most ever significant CSRWR of EVWs of NCs. That CSRWRs mainly focused, for the first time ever, on all types of CSR information; especially, employee, community and customer disclosures as shown in Appendix 5.

**Table 5: The average dates (quarterly basis) of launching new webpages of oil companies regarding different types of ownerships and regardless of website versions.**

Types of Ownership	Pre-revolution era		Post-revolution era		Average
	2008-2009	2010-2011	2012-2013	2014-2015	
Owner	◀ Q2-2007	Q1-2010	◀ Q2-2011	Q3-2014	<b>Q3-2010</b>
JVCs	Q2-2008	◀ Q2-2009	◀ Q1-2011	◀ Q3-2013	<b>Q4-2009</b>
NCs	◀ Q4-2006	◀ Q2-2008	Q1-2012	◀ Q1-2013	<b>Q3-2011</b>
<b>Average</b>	<b>◀ Q4-2007</b>	<b>◀ Q4-2009</b>	<b>◀ Q3-2011</b>	<b>◀ Q3-2013</b>	<b>Q3-2010</b>

2010 was clearly, especially Q3, the peak of CSRWR of most oil companies as shown in Table 7. This result is not surprised due to the tremendous number of launched webpages in that year. Appendix 5 shows that, in general, 2010-2011 witnessed the largest number of launched webpages; 379 out of 1289 (30%) from 2004 to 2015. 85% of them for AVWs (328) and what have been launched in 2010 only for AVWs were 189 web pages (58% of the total) as shown in Figure 3. Accordingly, this historical volume of launched web pages should, obviously, influence the result of mapping CSRWR during the research time span (from 2008 to 2015).

Closer look to 2010-2011 as the most crisis-like intensive period, AVWs have been targeted predominantly with respect of CSRWRs as shown in Appendix 5. CSRWRs have been achieved mainly, as mentioned before, in 2010 (pre-Arab spring period) as shown in Figure 3. The unique number of new launched webpages of Arabic version interface is significantly greater than the EVWs as presented in Appendix 10. This may be interpreted as strategic CSR society-oriented approach with new unique initiatives. These initiatives carefully recommended by top-level management and based on a good identification of primary stakeholders and great capability of company to face unexpectable ethical boundaries established by stakeholders (Heslin & Ochoa, 2008).

It is worth saying that boosting CSR disclosure in this period, pre-Arab spring, was due to some national programs entitled “Tomorrow of Libya” which was exclusively led by Saif El-Islam, Colonel Gadhafi’s Son (Amnesty International, 2010). Gadhafi Institution for Development is one of that national project; this institution has been led by Saif El-Islam, Colonel Gadhafi’s Son too, and signed several agreements<sup>18</sup> of sustainable development with many MNCs investing in oil sector in Libya. therefore, it was substantially motivated by political actors. This provides support to legitimacy theory in that some organisations could seek both social and political rewards as a part of legitimation process (Dowling & Pfeffer, 1975; Villiers & Staden, 2006; Zubek & Mashat, 2015).

Apart from pre-Arab spring period, most CSR disclosure of oil companies in 2011 (pre-, intra- and post-revolution periods) has been published on web pages launched during the first half (Q1 and Q2) of 2010 as presented in **Error! Reference source not found..** The new appointed committees of oil companies during post-revolution period (in 2011) achieved

<sup>18</sup> For example: Agreement signed with Eni Oil & Gas (Italian MNC) as stated in [http://web.archive.org/web/20100929223509/http://noclibya.com.ly/index.php?option=com\\_content&task=view&id=2633&Itemid=70](http://web.archive.org/web/20100929223509/http://noclibya.com.ly/index.php?option=com_content&task=view&id=2633&Itemid=70).

CSRWRs mostly for community and employee information (41 webpages out of 48) as shown in Appendix 10. None of them have been launched purposely for CSR information during the same period (Q3 and Q4-2011). **Error! Reference source not found.** shows the evidence in that the average dates of launching web pages used to publish CSR information during post-revolution period in 2011 is Q3-2010.

**Table 6: The average dates (quarterly basis) of launching new webpages of oil companies during 2010-2011.**

Types of Disclosure	2010	2011			CSR-Type Averages
	Pre-Arab Spring	Pre-Revolution	Intra-Revolution	Post-Revolution	
Community engagement	◀ Q4-2009	◀ Q1-2010	◀ Q1-2010	◀ Q4-2010	Q1-2010
Customer engagement/protection	Q1-2010	◀ Q2-2010	-	◀ Q4-2010	Q3-2010
Employee treatments	◀ Q2-2009	◀ Q1-2010	◀ Q3-2010	◀ Q1-2011	Q3-2009
Environment	◀ Q2-2009	◀ Q3-2009	-	◀ Q3-2008	Q2-2009
HS&E	◀ Q1-2009	◀ Q3-2009	◀ Q2-2010	◀ Q2-2011	Q2-2009
<b>Periodic Averages</b>	<b>◀ Q3-2009</b>	<b>◀ Q1-2010</b>	<b>◀ Q1-2010</b>	<b>◀ Q3-2010</b>	<b>Q4-2009</b>
The time span of period from:	01/01/2010	16/12/2010	17/02/2011	20/08/2011	01/01/2010
To:	15/12/2010	16/02/2011	19/08/2011	31/12/2011	31/12/2011

Figure 3 shows also different levels of performance, and probably awareness, in CSRWR of AVWs. As mentioned before, this period (2010-2011) is divided into four main periods on political-events basis. Therefore, they have different durations and different levels of political attentions. The flagged (■) periods in Figure 3 are politically the most tense periods, pre- and intra-revolution periods. In these two periods, 14 webpages have been launched on oil EVWs of companies as presented in Appendix 10. In contrary, AVWs witnessed launching 110 during these two periods as shown in Figure 3.

Blocking the internet services (“Google transparency report,” 2016) was during most of intra-revolution period. This exceptional event prevented oil companies, who host their websites in local service providers, from accessing them. However, out of thirteen companies in research sample, three of them (owner is included) have abroad service providers<sup>19</sup>. In that period, consequently, the owner has solely disclosed on AVW as presented in Appendix 3. Accordingly, the 14 and 31 webpages (shown in Appendix 10) launched by JVC and NC respectively have not been originally launched for CSR information. These webpages, in addition to some launched webpages by NOC (75 webpages), have been used as CSR vehicles later in 2012-2013 as presented in Appendix 4. The average dates of CSRWRs on AVWs during 2012-2013 was within Q3-2011.

NOC has performed uniquely during the second half of 2010 (pre-Arab spring period). The threats against organisational functions was great and impacted (Etelawi, 2015; Kailani & Saleh, 2012). From CSRWR of AVWs perspective, NOC’s performance has almost suspended in the two months of pre-revolution period, despite all governmental bodies, apparently, were attentively watching the unfolding of uprising at any time in Libya because of Tunisian

<sup>19</sup> As of September 2016, according to <https://check-host.net>.

revolution (Brookings Doha Center, 2014). This short period (Q1-2011) witnessed significant volume of CSR information when 49 data records have been published on AVWs as shown in Appendix 3. This level of disclosure is proportionally higher than the disclosure of pre-Arab spring period with respect of the duration of the two periods. However, all the 49 data records of CSR information have been found on webpages launched during Q1-2010 as shown in **Error! Reference source not found.** Furthermore, the UR in pre-revolution period uniquely peaked as shown in Appendix 3.

Four months and a half (post-revolution period) are likely to be just a warm-up period and not sufficient for the new transitional-committees (indicated by 🧑🏫 in Figure 3), who have been appointed at the end of intra-revolution period, to show their enthusiasm of being the leaders of the new era. The number of launched CSR-related webpages declined (from 120 to 48 webpages) during the 131 days of post-revolution period compared to intra-revolution period as shown in Appendix 10. In general, NCs have performed better than JVCs and NOC with respect of CSRWR timing of AVWs in this period as presented in Figure 3. While CSR information published on webpages launched during Q4-2010, CSRWRs of JVCs and NOC have lagged approximately 6 months (during Q2-2010) in the same period as presented Figure 3.

We found from analysing the data of CSRWRs that during post-revolution era, 2012-2013, new managements have widely published CSR information on EVWs as soon as they appointed as shown in Appendix 4. This period witnessed early CSRWRs of EVWs—this was surprisingly ahead of AVWs—during the first quarter of 2012. This could be explained as the significance of international stakeholders and foreign affiliations during the very first stage of their managerial era. That decision might be a part of urgent legitimization process of new government by which oil companies are fully or partially owned.



institutional earthquake took place in oil sector (Kailani & Saleh, 2012; Smith & Coriell, 2011), and other industries too, since wide managerial ‘reconstruction’ at the level management in most oil companies. Secondly, NOC had perhaps kept on publishing on *old* AVW, which was already over-reconstructed, until the summer of 2014 when they launched new-look website with comprehensive reconstruction<sup>20</sup>.

2014-2015 is the period when AVWs have eventually brought oil companies’ attentions after long overlooking since Q3-2011 as presented in in Appendix 4. This is the second significant CSRWRs took place after revolution since CSRWR of EVWs in 2012-2013. All types of CSR disclosures on AVWs were considered in CSRWR of AVWs in 2014 as presented in Appendix 8. Considering CSRWR of AVWs was apparently in concurrent with the rapid influence of new local actors on oil companies and their operations (Kailani & Saleh, 2012; Strazzari & Tholens, 2014).

**Table 7: The average dates (quarterly basis) of launching new webpages on the websites of oil companies.**

Type of CSR Disclosure	2008-2009	2010-2011	2012-2013	2014-2015	CSR-Type Averages
Community engagement	◀ Q3-2007	Q1-2010	◀ Q3-2011	◀ Q3-2013	Q3-2010
Customer engagement/protection	◀ Q3-2007	Q2-2010	Q1-2012	Q2-2014	Q3-2012
Employee treatments	◀ Q3-2007	◀ Q3-2009	◀ Q4-2011	◀ Q1-2013	Q3-2010
Environment	Q2-2008	◀ Q1-2009	◀ Q1-2011	Q1-2014	Q1-2010
HS&E	◀ Q2-2007	◀ Q2-2009	◀ Q2-2011	Q1-2014	Q2-2011
<b>Periodic Averages</b>	<b>◀ Q4-2007</b>	<b>◀ Q4-2009</b>	<b>◀ Q3-2011</b>	<b>◀ Q3-2013</b>	<b>Q3-2010</b>

Generally, CSRWR for Employee disclosure on AVWs, regardless of the number of launching web pages in each period, was the most regular CSRWR in long term. The periodic difference between the average dates of CSRWR are mostly the same in biennial basis as presented in Table 7. This might reflect the importance of this type of disclosure, unlike its bottommost chronological CSRWR regularity in the English language websites as shown in Table 7. Most CSRWR of EVWs have been noticeably achieved in less acceleration starting from the very beginning of pre-revolutionary era. However, this finding does not reflect lacking firms’ awareness of CSR issues, which is already disapproved by the rapid attention has been paid on the EVWs in terms of the disclosures quantities as shown in Appendix 1. This was just alternative of updating Web-CSR content.

These two different types of updateability do mostly neither conflict nor associate with each other. For instance, in 2014-2015 *the EVWs in NCs* were observed with noticeable increase in CSR disclosure with 95% of textual UR (see Figure 2) whereas the CSRWR

<sup>20</sup> The first new-look of Arabic and English versions websites have been first detected in June 2014 via the following links on [www.archive.org](http://www.archive.org): for the first observed English version → <https://web.archive.org/web/20140707033514/http://noc.ly/index.php/en/> and the first observed Arabic version → <https://web.archive.org/web/20140626061514/https://noc.ly/index.php/ar/>.



concerned still as the same as they were mostly last reconstructed in 2012. The second similar example is the general suspension on *the EVWs in JVCs* in 2010-2011 when one of greatest employees' evacuations in the modern history took place. In that period, most of the disclosed CSR information had been published on webpages that have been launched in 2009; in spite the fact the next CSRWR was in 2012, which is the beginning of post-revolutionary era in conjunction with returning most of the evacuated employees, most of CSR information was rarely to be republished in other years with the same URL, CSR disclosure type and CSR disclosure quantities (biennial-based updateability in 2010-2011 was 99%).

Totality assessment of CSR disclosure (Campbell, 2000) might provide full picture of the companies' performance CSRWR, which the number of launched web pages (partially of entirely) for CSR information. In this section, we conducted comparative analysis between the figures of CSRWR as unique number of new launched web pages and the *total* size of websites (CSR and non-CSR webs pages) in biennial basis. Table 8 shows the significance of the chronological CSRWR with respect to different types of ownerships. For example, Owner's AVW is 471 web pages in 2008-2009 as presented in Appendix 7, while the unique number of launched web pages was 227 in the same period as presented in Appendix 5. Accordingly, the significance of CSRWR is  $227 \div 471 = 48.1\%$ . The results presented in Table 8 does not show any probable influence of the of political crisis on firms' performance in CSR disclosure in 2010-2011. Furthermore, the foreign-affiliated companies (JVCs) are less likely to engage CSR issues according to the collected data from their websites.

We should, further, highlight the significance of CSR information related to social domain, community and employee issues, which are mostly at the top of CSRWR agendas of oil companies in 2010-2011 as shown in Appendix 6. Regardless of the website versions used to disclose, 'community engagement' is mostly published on newly launched web pages instead of textually updating the current ones. This, accordingly, stress the society-oriented disclosure that oil companies in Libya, as well as other developing countries (Jamali & Sidani, 2012), adopt.

However, noticeable change in society requirements has been recently observed; especially in the environmental issues that have been surfaced after revolution (Kailani & Saleh, 2012) due to the heightening of freedom of speech margin (Freedom House, 2012). These increasing demands about the accumulated environmental consequences of oil operations for long time ago (Kailani & Saleh, 2012) consistent, to some degrees, with those companies' performance in CSR disclosure concerned from CSRWR perspective. An increase in the significance of CSRWR of environmental information (from 1.9% in 2008-2009 to 3.1% in 2014-2015) is an equivalent response to the recent society expectations that have been already converted to serious threats against the activities of some oil companies, for example, in 2012 in Zawia City (Kailani & Saleh, 2012), 50 KM far from the capital city.

Generally, there is noticeable decline in the significance of CSRWR from 2008 to 2015. Table 8 shows that averagely -6% (in biennial basis) is the decline of the significance of CSRWR of AVWs. According to data analysis, the consideration of CSR information has been relegated after revolution by new appointed managements.

NOC has the largest portion of the decline of the significance of CSRWR of AVWs by biennial average of -4% as presented in Table 8. It is not clear whether NOC recently aims to decentralise online media in oil sector, which is popular even at national level (Abuhadra & Ajaal, 2014), as new vision of post-revolution management. This status of decreasing performance could be, also, a part of side-step tactic to avoid confrontation with stakeholders' pressures (Oliver, 1991) instead of facing the consequences of probable failure of establishing effective communications between firms and stakeholders (Costa & Menichini, 2013). However, this may not maintain firms' legitimacy (Suchman, 1995).

The final interpretation of the decline of CSRWR (of all oil companies) on AVW should probably be linked to EVW where the significance of CSRWR has, in contrary, increased. While it is not scientifically clear the probable influence of the language on stakeholders' interests (Biddinika et al., 2016; Gjølberg, 2009), the recent focus on EVW with respect to the significance of CSRWR may be interpreted, also, as a part of the new vision of stakeholders management (Selmier, Newenham-Kahindi, & Oh, 2015) and/or the influence of foreign affiliation (Beddewela & Fairbrass, 2016; Islam & Deegan, 2008); especially, via online media (Rike, 2013).

**Table 8: The significance of CSRWR of the total size of website(s)**

Website Versions	Types of Ownership	2008-2009	2010-2011	2012-2013	2014-2015	Weighted Average	Slope <sup>21</sup>
Arabic	Owner	48%	23%	4%	42%	<b>24%</b>	-4%
	JVCs	20%	9%	3%	10%	<b>10%</b>	-3%
	NCs	13%	19%	16%	14%	<b>16%</b>	0%
	<b>Weighted Average</b>	<b>37%</b>	<b>20%</b>	<b>7%</b>	<b>21%</b>	<b>20%</b>	-6%
English	Owner	20%	3%	-	27%	<b>12%</b>	4%
	JVCs	19%	14%	6%	4%	<b>9%</b>	-5%
	NCs	5%	-	19%	5%	<b>14%</b>	1%
	<b>Weighted Average</b>	<b>17%</b>	<b>7%</b>	<b>14%</b>	<b>10%</b>	<b>11%</b>	-1%

## Conclusion

This paper aims to deepen the understanding of CSR disclosure via online media by focus on the technical features should be assessed to make this type media efficient for CSR disclosure regardless of the disclosed information volume. The first method determining Updateability Rates (URs) of 'Web contents' based on the comparison between, on the one hand, frequencies of longitudinal observation of web pages (URLs) contain a specific type, and size, of CSR disclosure within more than a period and, on the hand, the size of website where these replication(s) occurred. The second method, which is CSR-related Website Reconstruction (CSRWR), complements the first method in that URs depend only on the qualitative and quantitative uniqueness of 'Web contents', while the implementation of CSR-

<sup>21</sup> The average growth/decline of the figures over the eight years in biennial basis. Slope is determined using this equation:  $\frac{\sum(x-\bar{x})(y-\bar{y})}{\sum(x-\bar{x})^2}$ . Where 'x' is the periods (1, 2, 3 and 4) and 'y' is the significance of CSRWR in percentile.

related website hierarchy is not considered. Additionally, how the achieved CSRWR is significant compared to the size of website(s) during specific period.

This paper contributed to the literature by consisting with many scholars (Ahmad, 2004; Gray & Bebbington, 2001; Visser, 2005, 2006), first, the political environment, regardless of whether it is crisis-like or not, has an impact on both UR and CSRWR indicators of CSR disclosure. The difference in both CSRWR and UR outputs has been detected, from CSR perspective, between these two contrasting political environments in just two consecutive years (2010 and 2011) in Libyan context. Secondly, the collected CSR online-data about foreign-affiliated oil companies in Libya reveal that they mostly act in step-back performance in CSR disclosure compared to other oil companies that are fully owned by local authorities. They, foreign-affiliated oil companies, are mostly at the lowest levels for most CSRWR and UR results in this paper. Finally, noticeable retreating has been observed on leadership-like of CSR performance—according to CSRWR indicators—on AVW of National Oil Corporation (NOC) during post-revolution period compared to its peak performance before revolution. The probable reasons, which has been deductively presented in the discussion section, for such dramatic functional change in primary actors of online media are either stakeholders management, step-side tactic of legitimising activities or decentralisation of online media in the industry.

The management reconstruction followed the political change in 2011 has significant influence on the CSRWR of most oil companies studied in this paper. They prioritised EVWs by implementing them first before AVWs. It was an immediate action of new appointed managements after revolution. The new political landscape of the context was probably influential factor on that decision. New government was apparently requested to provide assurances for foreign investors in oil sector (Darendeli & Hill, 2015; Kailani & Saleh, 2012). In other words, foreign affiliations were the first target of establishing communication via websites of oil companies.

Theoretical contribution to the literature lies on consistency with legitimacy theory in explaining many findings that indicate to different legitimising strategies and tactics (O'Donovan, 2002; Oliver, 1991; Villiers & Staden, 2006) for oil companies' survivability against different threats that are politically grown up (Darendeli & Hill, 2015). Seeking legitimacy has been observed in parallel to identifying the primary stakeholders in Libyan context. the consistency of prioritising social domain with noticeable emphasis EVWs could be an indication of this concern. This paper might deepen the know-how of using one of the popular medium (websites) in CSR disclosure practices. This would probably lead to identify the appropriate type of CSR disclosure and CSR-related media that helps to gain/maintain legitimacy (Deegan, 2002).

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## Appendix 1

The number of data records with reference to different type of ownerships.

Website version	Types of disclosure	2008-2009				2010-2011				2012-2013				2014-2015				Totals			
		JVCs	NCs	Owner	Total	JVCs	NCs	Owner	Total	JVCs	NCs	Owner	Total	JVCs	NCs	Owner	Total	JVCs	NCs	Owner	Grand Totals
Arabic	Community	9	11	84	<b>104</b>	17	10	153	<b>180</b>	16	61	100	<b>177</b>	13	26	38	<b>77</b>	55	108	375	<b>538</b>
	Customer	0	2	0	<b>2</b>	0	2	4	<b>6</b>	0	3	1	<b>4</b>	2	7	1	<b>10</b>	2	14	6	<b>22</b>
	Employee	21	15	48	<b>84</b>	22	14	100	<b>136</b>	5	50	55	<b>110</b>	7	52	34	<b>93</b>	55	131	237	<b>423</b>
	Environment	1	4	21	<b>26</b>	4	3	29	<b>36</b>	2	3	24	<b>29</b>	11	10	14	<b>35</b>	18	20	88	<b>126</b>
	HS&E	1	9	3	<b>13</b>	14	5	15	<b>34</b>	3	7	0	<b>10</b>	9	29	0	<b>38</b>	27	50	18	<b>95</b>
	<b>Total</b>	<b>32</b>	<b>41</b>	<b>156</b>	<b>229</b>	<b>57</b>	<b>34</b>	<b>301</b>	<b>392</b>	<b>26</b>	<b>124</b>	<b>180</b>	<b>330</b>	<b>42</b>	<b>124</b>	<b>87</b>	<b>253</b>	<b>157</b>	<b>323</b>	<b>724</b>	<b>1204</b>
English	Community	23	0	23	<b>46</b>	8	0	19	<b>27</b>	6	8	3	<b>17</b>	10	19	21	<b>50</b>	47	27	66	<b>140</b>
	Customer	6	0	2	<b>8</b>	0	0	0	<b>0</b>	0	7	0	<b>7</b>	8	14	12	<b>34</b>	14	21	14	<b>49</b>
	Employee	72	1	12	<b>85</b>	35	0	3	<b>38</b>	9	36	25	<b>70</b>	10	67	13	<b>90</b>	126	104	53	<b>283</b>
	Environment	128	3	12	<b>143</b>	11	0	4	<b>15</b>	5	4	29	<b>38</b>	18	8	7	<b>33</b>	162	15	52	<b>229</b>
	HS&E	16	2	0	<b>18</b>	1	1	4	<b>6</b>	8	4	0	<b>12</b>	11	17	13	<b>41</b>	36	24	17	<b>77</b>
	<b>Total</b>	<b>245</b>	<b>6</b>	<b>49</b>	<b>300</b>	<b>55</b>	<b>1</b>	<b>30</b>	<b>86</b>	<b>28</b>	<b>59</b>	<b>57</b>	<b>144</b>	<b>57</b>	<b>125</b>	<b>66</b>	<b>248</b>	<b>385</b>	<b>191</b>	<b>202</b>	<b>778</b>
Eng. & Ara.	Community	32	11	107	<b>150</b>	25	10	172	<b>207</b>	22	69	103	<b>194</b>	23	45	59	<b>127</b>	102	135	441	<b>678</b>
	Customer	6	2	2	<b>10</b>	0	2	4	<b>6</b>	0	10	1	<b>11</b>	10	21	13	<b>44</b>	16	35	20	<b>71</b>
	Employee	93	16	60	<b>169</b>	57	14	103	<b>174</b>	14	86	80	<b>180</b>	17	119	47	<b>183</b>	181	235	290	<b>706</b>
	Environment	129	7	33	<b>169</b>	15	3	33	<b>51</b>	7	7	53	<b>67</b>	29	18	21	<b>68</b>	180	35	140	<b>355</b>
	HS&E	17	11	3	<b>31</b>	15	6	19	<b>40</b>	11	11	0	<b>22</b>	20	46	13	<b>79</b>	63	74	35	<b>172</b>
	<b>Total</b>	<b>277</b>	<b>47</b>	<b>205</b>	<b>529</b>	<b>112</b>	<b>35</b>	<b>331</b>	<b>478</b>	<b>54</b>	<b>183</b>	<b>237</b>	<b>474</b>	<b>99</b>	<b>249</b>	<b>153</b>	<b>501</b>	<b>542</b>	<b>514</b>	<b>926</b>	<b>1982</b>

## Appendix 2

The weighted average URs (%) of 13 oil companies working in Libya during from 2008 to 2015, according to 'Web contents' method.

Website version	Types of disclosure	2008-2009				2010-2011				2012-2013				2014-2015			
		JVCs	NCs	Owner	Gap of Total	JVCs	NCs	Owner	Gap of Total	JVCs	NCs	Owner	Gap of Total	JVCs	NCs	Owner	Gap of Total
Arabic	Community	99.3	98.8	100	<b>99.8</b>	92.8	98.9	100	<b>99.2</b>	98.6	97.6	100	<b>98.9</b>	100	98.7	100	<b>99.5</b>
	Customer	-	100	-	<b>100</b>	-	100	-	<b>100</b>	-	99.5	100	<b>99.7</b>	100	99.9	100	<b>99.9</b>
	Employee	94.7	98.7	100	<b>98.3</b>	92.2	98.8	100	<b>98.6</b>	97.8	99.2	100	<b>99.5</b>	100	99.8	100	<b>99.9</b>
	Environment	100	100	100	<b>100</b>	88.7	100	100	<b>98.2</b>	92.9	99.5	100	<b>99.4</b>	98.7	99.9	100	<b>99.6</b>
	HS&E	-	100	100	<b>100</b>	90.9	100	-	<b>96.2</b>	90.5	100	-	<b>97.1</b>	98.4	100	-	<b>99.6</b>
	<b>Gap of Total</b>	<b>96.1</b>	<b>99.2</b>	<b>100</b>	<b>99.2</b>	<b>91.7</b>	<b>99.2</b>	<b>100</b>	<b>98.7</b>	<b>97.1</b>	<b>98.4</b>	<b>100</b>	<b>99.1</b>	<b>99.3</b>	<b>99.6</b>	<b>100</b>	<b>99.7</b>
	No. of data records	32	41	156	<b>229</b>	57	34	301	<b>392</b>	26	124	180	<b>330</b>	42	124	87	<b>253</b>
English	Community	95.5	-	100	<b>97.5</b>	99.5	-	100	<b>99.9</b>	99.2	99.3	100	<b>99.4</b>	100	96.4	100	<b>98.6</b>
	Customer	98.5	-	100	<b>98.9</b>	-	-	-	-	-	93.2	-	<b>93.2</b>	100	89.2	100	<b>95.2</b>
	Employee	94.9	100	99.6	<b>95.5</b>	98.8	-	100	<b>98.9</b>	98.1	96.5	100	<b>97.4</b>	100	96.8	100	<b>97.2</b>
	Environment	99.1	100	99.6	<b>99.1</b>	99.4	-	98.8	<b>99.2</b>	100	87.7	100	<b>98.2</b>	99.7	96.9	100	<b>98.9</b>
	HS&E	92.4	100	-	<b>93.0</b>	100	100	100	<b>100</b>	65.0	97.7	-	<b>79.5</b>	92.5	94.3	100	<b>95.2</b>
	<b>Gap of Total</b>	<b>96.9</b>	<b>100</b>	<b>99.8</b>	<b>97.4</b>	<b>99.0</b>	<b>100</b>	<b>99.8</b>	<b>99.3</b>	<b>87.6</b>	<b>96.1</b>	<b>100</b>	<b>95.9</b>	<b>98.1</b>	<b>95.9</b>	<b>100</b>	<b>97.1</b>
	No. of data records	245	6	49	<b>300</b>	55	1	30	<b>86</b>	28	59	57	<b>144</b>	57	125	66	<b>248</b>
Eng. & Ara.	Community	96.4	98.8	100	<b>99.0</b>	94.9	98.9	100	<b>99.3</b>	98.8	97.8	100	<b>98.9</b>	100	97.9	100	<b>99.1</b>
	Customer	98.5	100	100	<b>99.1</b>	-	100	100	<b>100</b>	-	94.9	100	<b>95.3</b>	100	92.4	100	<b>96.2</b>
	Employee	94.8	98.8	99.9	<b>96.9</b>	96.3	98.8	100	<b>98.7</b>	98.0	97.6	100	<b>98.5</b>	100	97.6	100	<b>98.2</b>
	Environment	99.1	100	99.8	<b>99.2</b>	95.6	100	99.9	<b>98.5</b>	98.0	91.7	100	<b>98.7</b>	99.3	98.3	100	<b>99.2</b>
	HS&E	92.7	100	100	<b>95.5</b>	91.5	100	100	<b>96.8</b>	70.9	98.8	-	<b>85.8</b>	94.7	97.4	100	<b>97.0</b>
	<b>Gap of Total</b>	<b>96.8</b>	<b>99.3</b>	<b>99.9</b>	<b>98.2</b>	<b>95.2</b>	<b>99.2</b>	<b>100</b>	<b>98.8</b>	<b>92.0</b>	<b>97.4</b>	<b>100</b>	<b>98.0</b>	<b>98.6</b>	<b>97.3</b>	<b>100</b>	<b>98.2</b>
	No. of data records	277	47	205	<b>529</b>	112	35	331	<b>478</b>	54	183	237	<b>474</b>	99	249	153	<b>501</b>



## Appendix 3

The weighted average URs (%) of 13 oil companies working in Libya during 2010-2011, according to 'Web contents' method, with reference to four periods based on different political events took place as follows:

Website version	Types of disclosure	Pre-Arab spring				Pre-revolution				Intra-revolution				Post-revolution			
		JVCs	NCs	Owner	Gap of Total	JVCs	NCs	Owner	Gap of Total	JVCs	NCs	Owner	Gap of Total	JVCs	NCs	Owner	Gap of Total
Arabic	Community	92.5	97.8	100	<b>99.1</b>	94.1	100	100	<b>99.8</b>	-	-	100	<b>100</b>	93.3	100	100	<b>99.0</b>
	Customer	-	-	100	<b>100</b>	-	-	-	-	-	-	-	-	-	100	100	<b>100</b>
	Employee	90.8	98.8	100	<b>98.4</b>	98.0	-	100	<b>99.3</b>	-	-	100	<b>100</b>	100	-	100	<b>100</b>
	Environment	92.2	100	100	<b>99.0</b>	100	-	100	<b>100</b>	-	-	-	-	77.8	-	100	<b>96.0</b>
	HS&E	83.8	100	100	<b>95.2</b>	98.8	-	100	<b>99.5</b>	-	-	100	<b>100</b>	89.7	-	100	<b>91.8</b>
	<b>Gap of Total</b>	<b>90.5</b>	<b>99.0</b>	<b>100</b>	<b>98.6</b>	<b>98.2</b>	<b>100</b>	<b>100</b>	<b>99.6</b>	-	-	<b>100</b>	<b>100</b>	<b>89.8</b>	<b>100</b>	<b>100</b>	<b>98.1</b>
	No. of data records	37	27	208	272	10	1	38	49	0	0	14	14	10	6	41	57
English	Community	99.5	-	100	<b>99.9</b>	100	-	-	<b>100</b>	-	-	-	-	-	-	-	-
	Customer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	98.7	-	100	<b>98.8</b>	-	-	-	-	-	-	-	-	100	-	-	<b>100</b>
	Environment	99.2	-	98.8	<b>99.1</b>	100	-	-	<b>100</b>	-	-	-	-	100	-	-	<b>100</b>
	HS&E	-	100	100	<b>100</b>	100	-	-	<b>100</b>	-	-	-	-	-	-	-	-
	<b>Gap of Total</b>	98.9	-	<b>99.6</b>	<b>99.3</b>	<b>100</b>	-	-	<b>100</b>	-	-	-	-	<b>100</b>	-	-	<b>100</b>
	No. of data records	50	1	30	81	3	0	0	3	0	0	0	0	2	0	0	2
Eng. & Ara.	Community	95.0	97.8	100	<b>99.3</b>	97.1	100	100	<b>99.8</b>	-	-	100	<b>100</b>	93.3	100	100	<b>99.0</b>
	Customer	-	-	100	<b>100</b>	-	-	-	-	-	-	-	-	-	100	100	<b>100</b>
	Employee	96.0	98.8	100	<b>98.5</b>	98.0	-	100	<b>99.3</b>	-	-	100	<b>100</b>	100	-	100	<b>100</b>
	Environment	97.4	100	100	<b>99.0</b>	100	-	100	<b>100</b>	-	-	-	-	85.2	-	100	<b>96.3</b>
	HS&E	83.8	100	100	<b>96.3</b>	99.0	-	100	<b>99.5</b>	-	-	100	<b>100</b>	89.7	-	100	<b>91.8</b>
	<b>Gap of Total</b>	<b>95.3</b>	<b>99.0</b>	<b>100</b>	<b>98.7</b>	<b>98.6</b>	<b>100</b>	<b>100</b>	<b>99.7</b>	-	-	<b>100</b>	<b>100</b>	<b>91.4</b>	<b>100</b>	<b>100</b>	<b>98.1</b>
	No. of data records	87	28	238	353	13	1	38	52	0	0	14	14	12	6	41	59

Pre-Arab spring: from **01/01/2010** to **15/12/2010**

Pre-revolution: from **16/12/2010** to **16/02/2011**

Intra-revolution: from **17/02/2011** to **21/08/2011**

Post-revolution: from **22/08/2011** to **31/12/2011**

## Appendix 4

The average dates (quarterly basis) of launching new webpages of oil companies regarding websites versions and different types of ownership.

Websites Versions	Types of Ownership	Pre-revolution era		Post-revolution era		Log. Average
		2008-2009	2010-2011	2012-2013	2014-2015	
Arabic	Owner	◀ Q2-2007	Q1-2010	◀ Q2-2011	Q3-2014	<b>Q1-2010</b>
	JVCs	Q1-2008	◀ Q2-2009	◀ Q4-2010	Q1-2014	<b>Q2-2010</b>
	NCs	◀ Q4-2006	◀ Q3-2008	Q1-2012	◀ Q3-2013	<b>Q2-2011</b>
	<b>Log. Average</b>	<b>◀ Q2-2007</b>	<b>◀ Q4-2009</b>	<b>◀ Q3-2011</b>	<b>Q1-2014</b>	<b>Q3-2010</b>
English	Owner	◀ Q3-2007	Q1-2010	Q1-2012	Q4-2014	<b>Q3-2011</b>
	JVCs	Q2-2008	◀ Q1-2009	◀ Q2-2011	◀ Q2-2013	<b>Q3-2009</b>
	NCs	◀ Q3-2007	◀ Q4-2005	Q1-2012	◀ Q2-2012	<b>Q1-2012</b>
	<b>Log. Average</b>	<b>Q1-2008</b>	<b>◀ Q2-2009</b>	<b>Q1-2012</b>	<b>◀ Q2-2013</b>	<b>Q3-2010</b>

## Appendix 5

The unique numbers (not replicated) of launched web pages regarding different types of CSR disclosure as follows:

1- Community engagement. 2- Customer engagement/protection. 3- Employee treatments. 4- Environmental issues. 5- HS&E

Website version	Owner ship	Launched before 2008						2008-2009						2010-2011						2012-2013						2014-2015					
		1	2	3	4	5	All	1	2	3	4	5	All	1	2	3	4	5	All	1	2	3	4	5	All	1	2	3	4	5	All
Arabic	Owner	47	0	44	36	3	<b>130</b>	118	3	82	12	12	<b>227</b>	155	2	92	15	13	<b>277</b>	14	0	10	1	0	<b>25</b>	27	1	30	11	0	<b>69</b>
	JVCs	9	0	15	3	6	<b>33</b>	10	0	14	1	4	<b>29</b>	4	0	6	3	9	<b>22</b>	3	0	2	0	0	<b>5</b>	3	2	2	5	4	<b>16</b>
	NCs	6	2	17	4	9	<b>38</b>	5	0	6	1	2	<b>14</b>	16	2	8	2	1	<b>29</b>	13	0	28	3	4	<b>48</b>	3	4	15	2	14	<b>38</b>
	<b>Total</b>	<b>62</b>	<b>2</b>	<b>76</b>	<b>43</b>	<b>18</b>	<b>201</b>	<b>133</b>	<b>3</b>	<b>102</b>	<b>14</b>	<b>18</b>	<b>270</b>	<b>175</b>	<b>4</b>	<b>106</b>	<b>20</b>	<b>23</b>	<b>328</b>	<b>30</b>	<b>0</b>	<b>40</b>	<b>4</b>	<b>4</b>	<b>78</b>	<b>33</b>	<b>7</b>	<b>47</b>	<b>18</b>	<b>18</b>	<b>123</b>
English	Owner	10	1	2	7	0	<b>20</b>	21	0	3	2	2	<b>28</b>	17	0	3	0	1	<b>21</b>	1	0	5	7	0	<b>13</b>	6	11	10	5	12	<b>44</b>
	JVCs	4	0	9	1	9	<b>23</b>	6	0	9	20	1	<b>36</b>	7	0	6	2	3	<b>18</b>	4	0	5	4	3	<b>16</b>	3	0	0	8	3	<b>14</b>
	NCs	0	0	1	1	3	<b>5</b>	0	0	1	0	2	<b>3</b>	3	2	7	0	0	<b>12</b>	6	6	10	2	4	<b>28</b>	2	4	0	1	1	<b>8</b>
	<b>Total</b>	<b>14</b>	<b>1</b>	<b>12</b>	<b>9</b>	<b>12</b>	<b>48</b>	<b>27</b>	<b>0</b>	<b>13</b>	<b>22</b>	<b>5</b>	<b>67</b>	<b>27</b>	<b>2</b>	<b>16</b>	<b>2</b>	<b>4</b>	<b>51</b>	<b>11</b>	<b>6</b>	<b>20</b>	<b>13</b>	<b>7</b>	<b>57</b>	<b>11</b>	<b>15</b>	<b>10</b>	<b>14</b>	<b>16</b>	<b>66</b>
Arabic & English	Owner	57	1	46	43	3	<b>150</b>	139	3	85	14	14	<b>255</b>	172	2	95	15	14	<b>298</b>	15	0	15	8	0	<b>38</b>	33	12	40	16	12	<b>113</b>
	JVCs	13	0	24	4	15	<b>56</b>	16	0	23	21	5	<b>65</b>	11	0	12	5	12	<b>40</b>	7	0	7	4	3	<b>21</b>	6	2	2	13	7	<b>30</b>
	NCs	6	2	18	5	12	<b>43</b>	5	0	7	1	4	<b>17</b>	19	4	15	2	1	<b>41</b>	19	6	38	5	8	<b>76</b>	5	8	15	3	15	<b>46</b>
	<b>Total</b>	<b>76</b>	<b>3</b>	<b>88</b>	<b>52</b>	<b>30</b>	<b>249</b>	<b>160</b>	<b>3</b>	<b>115</b>	<b>36</b>	<b>23</b>	<b>337</b>	<b>202</b>	<b>6</b>	<b>122</b>	<b>22</b>	<b>27</b>	<b>379</b>	<b>41</b>	<b>6</b>	<b>60</b>	<b>17</b>	<b>11</b>	<b>135</b>	<b>44</b>	<b>22</b>	<b>57</b>	<b>32</b>	<b>34</b>	<b>189</b>
# of disclosing companies on new webpages		7	3	8	5	7	<b>11</b>	7	1	8	4	5	<b>8</b>	8	3	7	4	7	<b>11</b>	9	3	7	5	5	<b>11</b>	7	5	6	5	5	<b>9</b>

### NOTES:

- The total unique number of launched webpages is 1289 out of 2037 data records have been published by 13 oil companies.
- The time span before 2008 mostly covers four years, from 2004 to 2007.

## Appendix 6

The significance of CSRWR of the total number of published CSR data records regarding different types of CSR disclosure.

Website versions	Type of Disclosure	2008-2009	2010-2011	2012-2013	2014-2015	Weighted Average
Arabic	Community	18.4%	10.8%	2.7%	5.6%	<b>9.2%</b>
	Customer	0.4%	0.2%	-	1.2%	<b>0.3%</b>
	Employee	14.1%	6.5%	3.7%	8.0%	<b>7.3%</b>
	Environment	1.9%	1.2%	0.4%	3.1%	<b>1.4%</b>
	HS & E	2.5%	1.4%	0.4%	3.1%	<b>1.6%</b>
	<b>Total</b>	<b>37.3%</b>	<b>20.2%</b>	<b>7.1%</b>	<b>20.8%</b>	<b>19.8%</b>
English	Community	6.8%	3.6%	2.8%	1.7%	<b>3.5%</b>
	Customer	-	0.3%	1.5%	2.3%	<b>1.1%</b>
	Employee	3.3%	2.1%	5.1%	1.6%	<b>2.7%</b>
	Environment	5.6%	0.3%	3.3%	2.2%	<b>2.3%</b>
	HS & E	1.3%	0.5%	1.8%	2.5%	<b>1.5%</b>
	<b>Total</b>	<b>16.9%</b>	<b>6.8%</b>	<b>14.4%</b>	<b>10.3%</b>	<b>11.1%</b>

## Appendix 7

The total size of checked website(s) on which CSR and non-CSR information have been published followed by [the number of checked websites]

Website Version	Type of Ownerships	2008-2009	2010-2011	2012-2013	2014-2015	Total
Arabic	Owner	471 [1]	1216 [2]	652 [1]	164 [1]	<b>2503 [5]</b>
	JVCs	147 [5]	258 [6]	151 [3]	155 [4]	<b>625 [18]</b>
	NCs	106 [3]	150 [4]	291 [4]	271 [5]	<b>820 [16]</b>
	<b>Total</b>	<b>663 [9]</b>	<b>1624 [12]</b>	<b>1095 [8]</b>	<b>566 [10]</b>	<b>3948 [39]</b>
English	Owner	137 [1]	615 [2]	-	163 [1]	<b>915 [4]</b>
	JVCs	193 [5]	133 [4]	247 [7]	320 [5]	<b>979 [21]</b>
	NCs	66 [3]	-	149 [8]	157 [6]	<b>370 [17]</b>
	<b>Total</b>	<b>457 [9]</b>	<b>748 [6]</b>	<b>395 [15]</b>	<b>664 [12]</b>	<b>2264 [42]</b>

## Appendix 8

The average dates (quarterly basis) of launching new webpages of oil companies regarding the two website versions and regardless of the types of ownership.

Website Version	Types of CSR Disclosure	2008-2009	2010-2011	2012-2013	2014-2015	CSR-Type Averages
Arabic	Community engagement	◀ Q3-2007	Q1-2010	◀ Q3-2011	Q1-2014	<b>Q3-2010</b>
	Customer engagement/protection	◀ Q1-2006	Q2-2010	◀ Q4-2011	Q2-2014	<b>Q1-2012</b>
	Employee treatments	◀ Q1-2007	◀ Q4-2009	◀ Q3-2011	Q1-2014	<b>Q3-2010</b>
	Environment	◀ Q1-2007	◀ Q1-2009	◀ Q1-2010	Q1-2014	<b>Q2-2010</b>
	HS&E	◀ Q1-2007	◀ Q3-2009	◀ Q2-2011	Q1-2014	<b>Q1-2011</b>
	<b>Periodic Averages</b>	<b>◀ Q2-2007</b>	<b>◀ Q4-2009</b>	<b>◀ Q3-2011</b>	<b>Q1-2014</b>	<b>Q3-2010</b>
English	Community engagement	Q1-2008	◀ Q4-2009	Q1-2012	◀ Q3-2013	<b>Q4-2010</b>
	Customer engagement/protection	Q1-2008	-	Q2-2012	Q2-2014	<b>Q4-2012</b>
	Employee treatments	Q1-2008	◀ Q2-2009	Q1-2012	◀ Q2-2012	<b>Q3-2010</b>
	Environment	Q2-2008	◀ Q3-2009	Q1-2012	◀ Q4-2013	<b>Q1-2010</b>
	HS&E	◀ Q2-2007	◀ Q4-2007	◀ Q1-2011	◀ Q3-2013	<b>Q2-2011</b>
	<b>Periodic Averages</b>	<b>Q1-2008</b>	<b>◀ Q2-2009</b>	<b>Q1-2012</b>	<b>◀ Q2-2013</b>	<b>Q3-2010</b>

## Appendix 9

The average dates (quarterly basis) of launching new webpages of oil companies regarding the two website versions during 2010-2011.

Website Versions	Type of Disclosure	2010	2011			CSR-Type Averages
		Pre-Arab Spring	Pre-Revolution	Intra-Revolution	Post-Revolution	
Arabic	Community engagement	↩ Q4-2009	↩ Q4-2009	↩ Q1-2010	↩ Q3-2010	<b>Q1-2010</b>
	Customer engagement/protection	Q1-2010	↩ Q1-2010	-	↩ Q3-2010	<b>Q2-2010</b>
	Employee treatments	↩ Q3-2009	↩ Q3-2009	↩ Q2-2010	↩ Q1-2011	<b>Q4-2009</b>
	Environment	↩ Q1-2009	↩ Q2-2009	-	↩ Q1-2008	<b>Q1-2009</b>
	HS&E	↩ Q1-2009	↩ Q3-2009	↩ Q2-2010	↩ Q1-2011	<b>Q3-2009</b>
	<b>Periodic Averages</b>	<b>↩ Q3-2009</b>	<b>↩ Q3-2009</b>	<b>↩ Q1-2010</b>	<b>↩ Q2-2010</b>	<b>Q4-2009</b>
English	Community engagement	Q1-2010	↩ Q4-2007	-	-	Q4-2009
	Customer engagement/protection	-	-	-	-	-
	Employee treatments	↩ Q2-2009	-	-	-	Q2-2009
	Environment	↩ Q3-2009	-	-	-	Q3-2009
	HS&E	↩ Q1-2009	↩ Q3-2002	-	-	Q4-2007
	<b>Periodic Averages</b>	<b>↩ Q3-2009</b>	<b>↩ Q1-2005</b>	-	-	<b>Q2-2009</b>

Pre-Arab spring: from **01/01/2010** to **15/12/2010**

Pre-revolution: from **16/12/2010** to **16/02/2011**

Intra-revolution: from **17/02/2011** to **19/08/2011**

Post-revolution: from **20/08/2011** to **31/12/2011**

## Appendix 10

The unique numbers (not replicated) of launched web pages during 2010-2011 regarding different types of CSR disclosure as follows:

1- Community engagement. 2- Customer engagement/protection. 3- Employee treatments. 4- Environmental issues. 5- HS&E

Website version	Owner ship	Pre-Arab Spring 01/01/2010 to 15/12/2010						Pre-revolution 16/12/2010 to 16/02/2011						Intra-revolution 17/02/2011 to 20/08/2011						Post-revolution 21/08/2011 to 31/12/2011						Total 01/01/2010 to 31/12/2011					
		1	2	3	4	5	All	1	2	3	4	5	All	1	2	3	4	5	All	1	2	3	4	5	All	1	2	3	4	5	All
Arabic	Owner	93	2	64	8	12	179	1	0	0	0	0	1	47	0	21	5	1	74	13	0	7	2	0	22	154	2	92	15	13	276
	JVCs	0	0	5	0	3	8	0	0	0	0	0	0	3	0	1	3	6	13	1	0	0	0	0	1	4	0	6	3	9	22
	NCs	2	0	0	0	0	2	0	1	0	0	0	1	11	1	6	2	1	21	3	0	2	0	0	5	16	2	8	2	1	29
	<b>Total</b>	<b>95</b>	<b>2</b>	<b>69</b>	<b>8</b>	<b>15</b>	<b>189</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>61</b>	<b>1</b>	<b>28</b>	<b>10</b>	<b>8</b>	<b>108</b>	<b>17</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>0</b>	<b>28</b>	<b>174</b>	<b>4</b>	<b>106</b>	<b>20</b>	<b>23</b>	<b>327</b>
English	Owner	16	0	0	0	1	17	0	0	0	0	0	0	0	0	1	0	0	1	1	0	2	0	0	3	17	0	3	0	1	21
	JVCs	0	0	0	0	0	0	2	0	0	0	0	2	1	0	0	0	0	1	4	0	6	2	3	15	7	0	6	2	3	18
	NCs	0	0	0	0	0	0	0	0	0	0	0	0	1	2	7	0	0	10	2	0	0	0	0	2	3	2	7	0	0	12
	<b>Total</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>17</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>7</b>	<b>0</b>	<b>8</b>	<b>2</b>	<b>3</b>	<b>20</b>	<b>27</b>	<b>2</b>	<b>16</b>	<b>2</b>	<b>4</b>	<b>51</b>
Arabic & English	Owner	109	2	64	8	13	196	1	0	0	0	0	1	47	0	22	5	1	75	14	0	9	2	0	25	171	2	95	15	14	297
	JVCs	0	0	5	0	3	8	2	0	0	0	0	2	4	0	1	3	6	14	5	0	6	2	3	16	11	0	12	5	12	40
	NCs	2	0	0	0	0	2	0	1	0	0	0	1	12	3	13	2	1	31	5	0	2	0	0	7	19	4	15	2	1	41
	<b>Total</b>	<b>111</b>	<b>2</b>	<b>69</b>	<b>8</b>	<b>16</b>	<b>206</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>63</b>	<b>3</b>	<b>36</b>	<b>10</b>	<b>8</b>	<b>120</b>	<b>24</b>	<b>0</b>	<b>17</b>	<b>4</b>	<b>3</b>	<b>48</b>	<b>201</b>	<b>6</b>	<b>122</b>	<b>22</b>	<b>27</b>	<b>378</b>



